CLAIMS

1. A method for reducing the viscosity of a viscous composition which is arranged to flow along a fluid flow path, said method comprising contacting the viscous composition with a treatment fluid formulation, said treatment fluid formulation comprising a polymeric material AA which includes -O- moieties pendent from a polymeric backbone thereof, wherein polymeric material AA is optionally cross-linked.

2. A method according to claim 1, wherein the viscosity of the viscous composition after contact with the treatment fluid formulation is less than 300cP measured at 25°C and $1000s^{-1}$.

3. A method according to claim 1 or claim 2, wherein the viscous composition, after contact with the treatment fluid formulation, exhibits shear thinning.

4. A method according to any preceding claim, wherein said viscous composition is an oil.

5. A method according to any preceding claim, wherein said treatment fluid formulation is initially contacted with said viscous composition at or downstream of a production means.

6. A method according to claim 5, wherein said fluid flow path is defined by a conduit means which includes a first conduit part which is arranged downstream of a production means.

7. A method according to any preceding claim, wherein said fluid flow path extends between a first point, remote from the point of production of the viscous composition, and a second point closer to the point of production of the viscous composition.

8. A method according to any preceding claim, wherein said fluid flow path is defined, in part, by a second conduit part which extends upwardly from below ground to above ground.

9. A method according to any preceding claim, wherein said treatment fluid formulation is arranged to disperse and/or emulsify said viscous composition on contact therewith.

10. A method according to any preceding claim, wherein flow is turbulent at the point of initial contact of said viscous composition with said treatment fluid formulation so that said composition is dispersed and/or emulsified on contact with said formulation.

11. A method according any preceding claim, wherein a delivery flow path is defined which is arranged to communicate with said fluid flow path wherein said treatment fluid formulation is dosed into said viscous composition in said fluid flow path via said delivery flow path.

12. A method according to any preceding claim, wherein the ratio of the flow rate (in weight per unit time) of treatment fluid formulation in said delivery flow path to

the flow rate (in the same units) of viscous composition in said fluid flow path is in the range 0.1 to 2.5.

13. A method according to any preceding claim, wherein the amount of water in the composition in said fluid flow path immediately after contact between said viscous composition and said treatment fluid formulation is less than 70wt%.

14. A method according to any preceding claim, wherein said treatment fluid formulation has a viscosity at 25°C and 1000s^{-1} of greater than 1cP and not greater than 50cP.

15. A method according to any preceding claim, wherein said treatment fluid formulation includes at least 70wt% water.

16. A method according to any preceding claim, wherein said treatment fluid formulation includes at least 0.2wt% and less than 10wt% of said polymeric material AA.

17. A method according to any preceding claim, wherein said treatment fluid formulation includes 94.5 to 99.6wt% water and 0.4 to 5.5wt% of said polymeric material AA; and the ratio of the wt% of said treatment fluid formulation to the wt% of said viscous composition contacted in the method is in the range 0.4 to 0.9.

18. A method according to any preceding claim, wherein said polymeric material AA is wholly soluble in water at 25°C.

19. A method according to any preceding claim, wherein said polymeric backbone of said polymeric material AA includes carbon atoms which are part of $-CH_2-$ moieties.

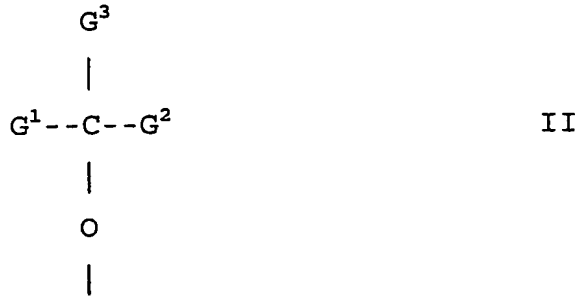
20. A method according to any preceding claim, wherein said polymeric backbone consists essentially of carbon atoms in the form of C-C single bonds.

21. A method according to any preceding claim, wherein said treatment fluid formulation includes a hydrogel which is an optionally cross-linked polysaccharide, polyvinylalcohol or polyvinylacetate.

22. A method according to any preceding claim, wherein said -O- moieties are directly bonded to the polymeric backbone.

23. A method according to any preceding claim, wherein said polymeric material AA includes, on average, at least 10 -O- moieties pendent from the polymeric backbone thereof.

24. A method according to any preceding claim, wherein said polymeric material AA includes a moiety:



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where G^1 and G^2 are other parts of the polymeric backbone and G^3 is another moiety pendent from the polymeric backbone.

25. A method according to any preceding claim, wherein at least 60 mole% of the polymeric material AA comprises vinyl moieties which are optionally cross-linked.

26. A method according to any preceding claim, wherein the free bond to the oxygen atom in the -O- moiety pendent from the polymeric backbone of polymeric material AA is bonded to a group R^{10} which comprises fewer than 10 carbon atoms and only includes atoms selected from carbon, hydrogen and oxygen atoms.

27. A method according to claim 26, wherein moiety -O-R^{10} in said polymeric material AA is an hydroxyl or acetate group.

28. A method according to any preceding claim, which involves selecting a said polymeric material AA; selecting a material BB which includes a functional group which is able to react in the presence of said polymeric material AA to cross-link polymeric material AA and form a polymeric material CC; and causing the formation of said polymeric material CC by a reaction involving said polymeric material AA and material BB.

29. A method according to claim 28, wherein formation of said polymeric material CC from said polymeric material AA and material BB involves a condensation reaction.

30. A method according to claim 28 or claim 29, wherein said material BB is selected from an aldehyde, carboxylic acid, urea, acroleine, isocyanate, vinyl sulphate or vinyl chloride of a diacid or includes any functional group capable of condensing with one or more groups of said polymeric material AA.

31. A method according to any of claims 28 to 30, wherein material BB has a general formula:

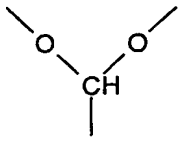
where G^5 represents a direct link or a linking moiety.

32. A method according to claim 31, wherein group G^5 is arranged to introduce rigidity into the cross-linking of polymeric material AA, wherein group G^5 includes at least some covalent bonds which are not freely rotatable.

33. A method according to claim 31 or claim 32, wherein group G^5 incorporates one or more aromatic or heteroaromatic groups.

34. A method according to any of claims 31 to 33, wherein group G^5 includes a polar group.

35. A method according to any of claims 28 to 34, wherein said polymeric material CC includes a moiety



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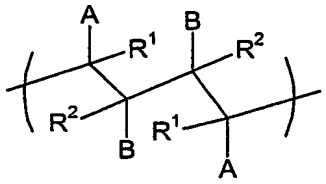
wherein the free bonds of the oxygen atoms are bonded to the polymeric backbone and the free bond of the carbon atom is bonded to a residue of the material BB.

36. A method according to any of claims 28 to 35, wherein said material BB comprises:

(i) a first polymeric material having a repeat unit of formula



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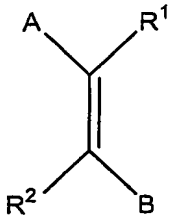
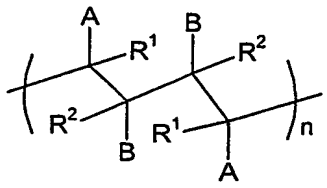
wherein A and B are the same or different, are selected from optionally-substituted aromatic and heteroaromatic groups and at least one comprises a relatively polar atom or group and R^1 and R^2 independently comprise relatively non-polar atoms or groups; or

(ii) a first polymeric material prepared or preparable by providing a compound of general formula



wherein A, B, R^1 and R^2 are as described above, in an aqueous solvent and causing the groups C=C in said compound to react with one another to form said first polymeric material.

37. A method according to claim 36, wherein said first polymeric material is of formula



wherein n is an integer.

38. A method according to any preceding claim, wherein after the viscous composition has been delivered to a desired location the viscous composition is caused to separate from other components of the treatment fluid formulation.

39. A method according to claim 38, wherein separation is achieved by reducing mixing or turbulent movement of the mixture and allowing the viscous composition to settle out from the water and optionally cross-linked polymeric material AA.

40. A method of preparation a treatment fluid formulation comprising contacting an optionally cross-linked polymeric material AA as described in any preceding claim, with water.

41. A treatment fluid formulation comprising:

- at least 95wt% water
- 4wt% or less of said polymeric material AA which has optionally been cross-linked.

42. A method of reducing the viscosity of a viscous composition which is arranged to flow along a fluid flow path, said method comprising contacting the viscous composition with a treatment fluid formulation, wherein said treatment fluid formulation includes a polymeric material which:

(a) is arranged to associate with, for example absorb onto, said viscous composition, especially oil, in order to enable droplets of said viscous composition to be formed and/or stablised; and/or

(b) is arranged to form a coating (which may be discontinuous) around droplets of said viscous composition;

(c) is arranged to form a hydrogel which is able to stabilise droplets of said viscous composition, especially oil.

43. A receptacle containing at least 100 litres of a said treatment fluid formulation as described in any of claims 1 to 41.